MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

TCC 3141 – CLOUD COMPUTING

(All Sections / Groups)

16 October 2019
2.30 p.m. – 4.30 p.m.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 6 printed pages including cover page with 5 questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

Question 1 [10 Marks]

The website of HolidayTour Sdn. Bhd., www.holidaytour.com, recorded users' bookings via direct hits at approximately 49 transactions/second while agents' bookings via Google hits recorded 42,000 transactions/second. The ticket booking transactions during peak hours is 10 times higher than the rest of the day. The website has a locking mechanism which enable a seat to be pre-allocated to one user prior to payment. However, Google can still display the allocated seat as available to its users.

In order to minimize such incidence, the company provided a temporal solutions by barring agent login during peak hours, but this means business lost to the company since transactions through agents are higher than transactions using the company's website. Since the company is already on a tight budget, purchasing additional servers is unlikely. The company is considering initially moving its website infrastructure to the cloud to make it more accessible. As Chief Technology Officer (CTO), the company's board of directors (BODs) want you to report on the following:

(a) Explain the main concepts of cloud computing based on accepted industry-wide definition.
[3 marks]

(b) State the reasons why the move to the cloud could be good for the company.
[3 marks]

(c) Identify possible entities (i.e. agents) that might pose a threat to cloud.
[4 marks]

Continued ...

Question 2 [10 Marks]

A fashion retailer with 12 stores spread across Malaysia hosted their own server infrastructure internally to provide retail platform and point-of-sale for all their stores which required a private network, creating problems keeping all 12 stores in synchronization. The company decided to migrate their platform to cloud solution. The company's board would like to get your review on the following:

(a) Compare the major differences between IaaS, PaaS and SaaS delivery models. [3 marks]

(b) Explain **FOUR (4)** mechanisms that the company can use to manage cloud remotely. [4 marks]

(c) If the company decides to move their points-of-sale to an online application backend entirely provided by cloud provider (i.e. IaaS), identify cloud usage costs that will be involved. [3 marks]

Continued ...

Question 3 [10 Marks]

(a) Illustrate the common components of a data center that are working together to provide virtualized IT resources supported by physical IT resources.

[3 marks]

(b) The advancement of data center technology has become the primary technology component that has enabled the implementation of hypervisor mechanism as the key feature in contemporary cloud computing. Based on Figure 1 below, describe this key feature.

[3 marks]

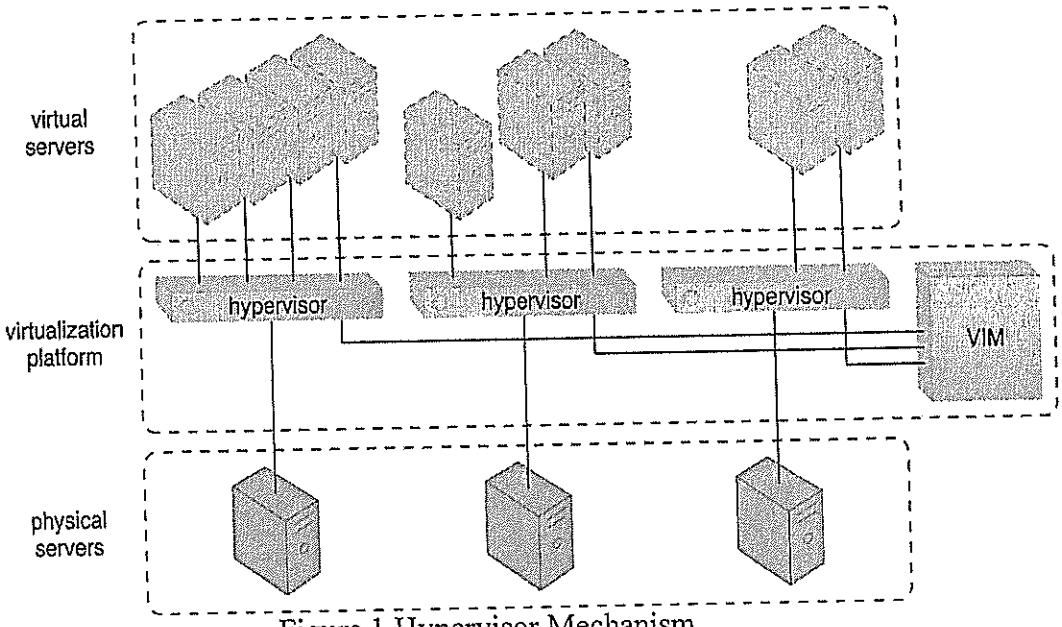

Figure 1 Hypervisor Mechanism

(c) Based on hypervisor mechanism, discuss the underlying operations of hypervisor clustering architecture.

[4 marks]

Continued ...

Question 4 [10 Marks]

Unable to monitor and control what its agents (mobile workforce) were accessing on the Internet using their mobile devices, i.e. laptops, a leading healthcare insurance provider wanted an effective security management solution for monitoring their official data card usage. With the aim to improve productivity of its agents and ensure they adhere to policies, the insurance solution provider decided to partner with your company, CloudSecure Inc., who could help them with services management, application monitoring and security.

You offered the insurance company a cloud-based web security solution on a SaaS model for 450 users. The company simply pays per user for all laptops and desktops that are being used by its mobile workforce or agents. The service also includes monitoring usage and creating periodic reports as per usage patterns of data card users. In your proposal, you explain the following:

(a) List **FOUR (4)** customization options of the cloud service instances that are usually available to the company as a cloud consumer.

[4 marks]

(b) With the help of a diagram, discuss the functional mechanism of Single sign-on (SSO) in enhancing the usability of cloud-based environments for access and management of distributed IT resources and solutions.

[4 marks]

(c) **TWO (2)** mechanisms use in cloud computing to monitor usage and calculate the payment fees.

[2 marks]

Continued ...

Question 5 [10 Marks]

(a) Identify measures that can be used to express the following Quality-of-Service (QoS) metrics:

(i) Reliability

(ii) Performance

[2 marks]

(b) According to QoS, scalability refers to guarantee given to cloud consumers on capacity fluctuation and system responsiveness to on-going demands. Discuss **FIVE (5)** cloud architectures that can be used to implement these measures.

[5 marks]

(c) In the event of service outage, explain **THREE (3)** cloud architectures that can be implemented by cloud providers to ensure system availability.

[3 marks]

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